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Archive

The subscription magazine for users of the Acorn Archimedes and its successors

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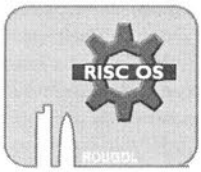
Newsbits Jim Nagel

Big news expected at London show

A coalition of parties – such as the RISC OS world has long wished for – is set to make an exciting announcement at the London show on Saturday October 25.

They are burning midnight oil to get a new product ready. They won't say any more than that until unveiling it on the day, except that it has been in development for a year.



Here, though, are some further reasons to come along to the show. Rougol, the London user group, is hosting it at the same venue as the past five years, a hotel just south of Heathrow – see details on the back cover.

• RISC OS will be running for the first time on the Arm **Cortex-A15** processor. This promises new computers with even better performance than the present leaders, the Panda Ro and the ArminiX.

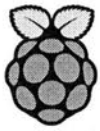
• The **biggest ever desktop** for RISC OS will dominate the Rougol stand: a resolution of 3040×2160 on a 40-inch ultra-hi-def 4K screen.

• **3D-printed cases for the Pi** will be shown by Soft Rock Software.

• A beta release of **Impression-X** will be unveiled. Richard Keefe has been working at the hundreds of source files of Computer Concepts' classic publishing software to convert it to native 32-bit operation, plus bugfixes and new features such as easy Jpeg import.

• The full version of R-Comp's **Delegate** application for protecting and recovering the system and files will launch at the show.

• A **new RiscOSM version**: the mapping application will now support postcodes and cover more countries.



• The new **Raspberry Pi B+** running RISC OS 5 on the Rool stand, among a variety of other hardware new and old.

• Riscy Robots will have a Raspberry Pi controlling a model railway.

• A new book, **A Potted History of Acorn**, will be launched by its author, David Bradforth.

• New and classic **Beeb games** for retro fans to enjoy.

Starfighter at Rougol

Andrew Hutchings, author of the games *Chocks Away*, *Stunt Racer* and *Starfighter 3000*, is to be special guest at Rougol's monthly meeting on November 17. He will talk about how he got into programming and the stories behind the development of

The APDL website has been relaunched as a lasting memorial to David Holden, who died in May. All his many applications and the huge collection of the Archimedes Public Domain Library remain available. David Bradforth will demonstrate the new site, apdl.org.uk, at the London show.

these classic Acorn games.

Rougol, the RISC OS User Group of London, meets at the Blue-Eyed Maid pub near London Bridge station on the third Monday of every month at 7:30pm (or earlier for curry). *rougol.jellybaby.net*

Braben even more elite

David Braben, a pioneer of computer gaming – he and Ian Bell wrote the game *Elite* for the BBC Micro in their bedrooms as teenagers back in the early 1980s – and father of the Raspberry Pi Foundation, was made OBE in the Queen's Birthday Honours list this summer. The award cited his work for the video-game and computer industries both in Britain and abroad.

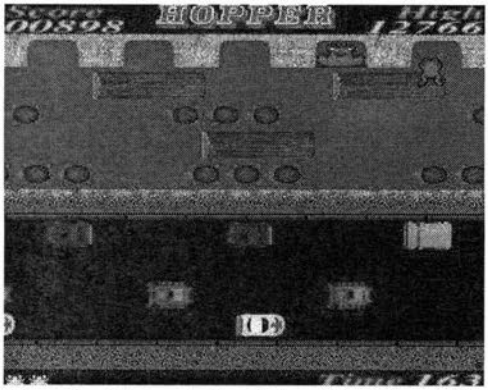
In 2012 he raised funds through Kickstarter to develop *Elite: Dangerous* as an update of the game that spread from

the Acorn to so many other platforms in the 1980s: a whole generation learned to dock wireframe spaceships and became intergalactic traders. The campaign raised £1.5 million, and the new game is to launch later this year.

Privacy software updates

Nat Queen has updated his security programs to work with latest hardware such as the ArminiX and Panda Ro. These include **!Erase** (which replaces *Nuke*) to wipe all traces of a file, **!Q-lock** to encrypt sensitive directories and **!Stealth**.

The last of these can store multiple encrypted directories inside a container file, each with its own passphrase, so that outsiders cannot even determine how many encrypted folders actually exist. "This provides 'plausible deniability' to defeat any authorities who may demand access to all your encrypted data," he said.



Remember **Hopper***? One of the original Acornsoft games, by Professor Andy Hopper (who got a CBE in 2007), was a favourite on the BBC Micro and then a standard on the Archimedes harddisc. How many hours did you spend saving the frog from traffic and hungry crocodiles? RISC OS Open has published an updated 32-bit version of it.*

Dr Queen is a mathematician at the University of Birmingham and an Archive member. *www.queen.clara.net/pgp/acorn.html*

Virtual Acorn upgrade

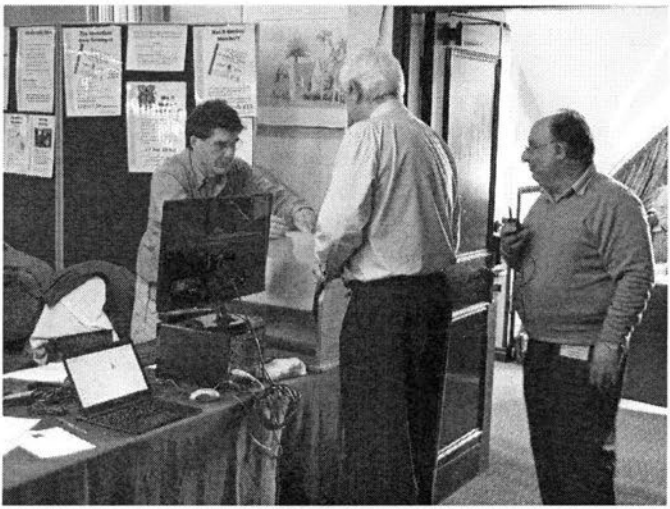
New versions of the Virtual RiscPC emulators are out, for better performance on Windows 7, Windows 8 and Mac. "The new versions of VirtualRPC benefit from more than 200 improvements, compared with 'silver' CD versions," said Aaron Timbrell of Virtual Acorn.

One of the main problems had to do with "User Account Control" in Windows 7 and 8. The new versions come with an overhauled user gude, a full set of RISC OS documentation and the latest !System components.

Upgrades cost £15 plus £3.50 postage and require the return of an original Virtual Acorn installation CD. (Very recent editions of the old version came on a white rather than a silver CD – people with these can upgrade free just by returning the CD.) Details at *virtualacorn.co.uk*

The Wakefield 2014 show

Ron Briscoe



Doug Webb (left) at the Wakefield club's stand just inside the door, while the main show organizer, Chris Hughes (right), keeps an eye on things. [Photo by Steve Fryatt]

Well, thanks to you lot being masochists who would rather read my drivel than respond to the editor's request *[on Archive-online before the show]* to volunteer a proper write-up for Archive, here I am again. You have only yourselves to blame.

Having had a relatively quick journey up the M42 and M1 from Brum to Wakefield, Doug Webb and I decided to pop into the roadside cafe close to the Cedar Court Hotel, the show venue. There we met up with Stephen Read, who had travelled up on his motorbike from Wolverhampton – an expensive decision, for his rear wheel had a puncture.

Breakfast over, Doug had a letter to post and we went across the road to the local post office, where I saw this example of Northern Honesty:

> **Suzuki Grand Vitara VVT for sale**
> 2006 3-door vehicle, with 43,157 mileage. Colour: champagne. Type: four-wheel drive. This is a lovely-looking car, been my pride and joy for 2 years. I am only the second owner. The car is in an immaculately clean order. I am selling reluctantly due to the car not being fit for purpose any longer.

See what you miss by not going to shows?

Spending spree begins

After parting with our entrance money in exchange for a small ticket, which I am certain is designed to be lost, so as to force one to pay again, I find my way into the hall blocked. No, it is not a queue, but lots of people trying to fill in their personal details for the raffle run by **Wakefield RISC OS Computer Club** (Wrocc).

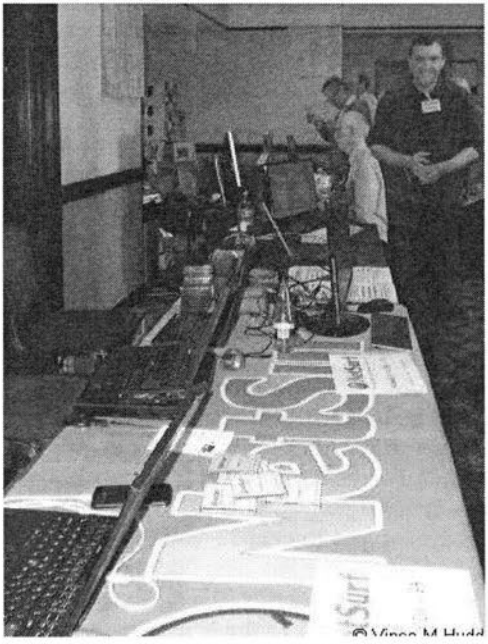
As the Wrocc stand is the first table by the door I start my spending by purchasing a raffle ticket, an *Awake* CD and renewing my subs. (My wife Christine is firmly convinced that the Wrocc subs can be renewed only in person. I don't know why.) Forms filled in and pleasantries exchanged with some of the Wrocc guys, I move on into the hall.

First on my list (yes, I do have a list) of essential purchases is MW Software, where I have a shock. For the first time that I can remember at a Wakefield show, Martin Würthner does not have an upgrade on offer for **Artworks**. He tells me he has been very busy working on a very lucrative contract, leaving him no time to work on

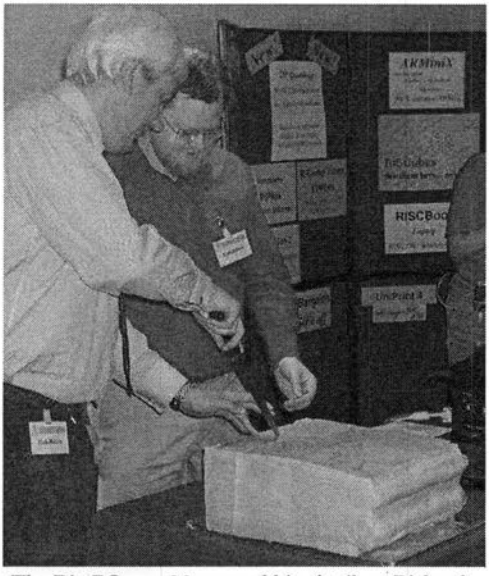
his RISC OS software. *[He said on the Artworks mailinglist after the show: "I do have plans for version 2.X3, but there is no planned release date yet." —Ed.]*

At the Sine Nomine Software stand quite a lot of people are interested in the new mapping application called !RiscOSM. It is on my list but I'll return later when the crowds have thinned a little.

So I go and bother the proprietors of North One Communications Ltd – **!Organizer** to you and me. They have nothing new to sell me. I move on to the Netsurf stand, where I purchase a disc of !Netsurf 3.1 and thank the developers for all their hard work. See, more people going to shows and showing their appreciation encourages the developers to carry on.



Netsurf 3.1 was available at the show on a £5 CD, which helps fund the project, or as the usual free download (netsurf-browser.org). The multi-platform browser is programmed by a team of volunteers, and Steve Fryatt (right) maintains its RISC OS frontend. [Photo by Vince Hudd]

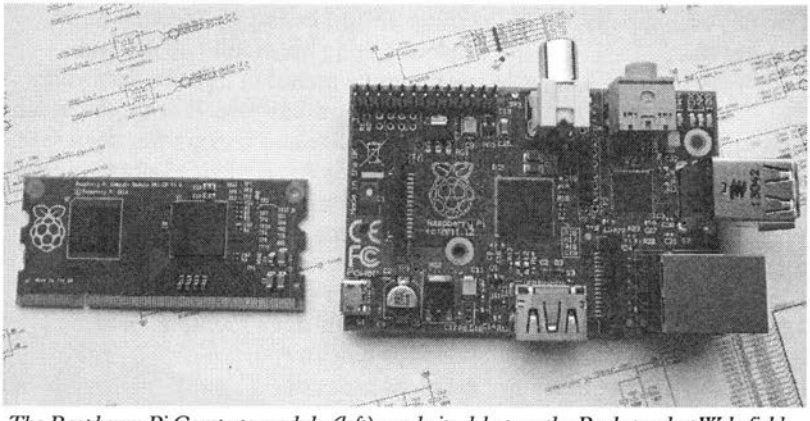


The RiscPC was 20 years old in April, so Richard Brown's wife made a special cake to celebrate its birthday at the show. He and Andrew Rawnsley, as show sponsors, demonstrated a new meaning for a RiscPC "slice". [Photo by Jim Nagel]

I have a few words with Richard Keefe, a first-time Wakefield exhibitor, who tells me that his 32-bitting of Computer Concepts' venerable !Impression to become **!Impression-X** is moving along, albeit slowly. He asks me if I would like to be a beta-tester, but I have to refuse because despite owning two different versions of Impression I have never used it.

Next is Steve Fryatt, who although not having anything new on his CDs tells me he is working on a newer version of **Locate2**. I don't know how he finds the time with all of his theatre commitments as well as having a full-time job. I hope, as a user of quite a lot of his software that he doesn't wear himself out.

The CJE Micros stand is so busy that I have to forgo a chat. I move on to RISC OS Open Ltd (Rool), manned by Steve Revill and Rob Sprowson. I purchase a new



The Raspberry Pi Compute module (left) made its debut on the Rool stand at Wakefield. It condenses the guts of a Pi (right) to a card that fits an ordinary memory socket. The idea is that hardware developers can customize the connections to suit their own projects. CJE Micros, for instance, is investigating whether it could be built into a laptop case.

RISC OS Pi card and a widget thingy. People are busy buying at the ROOL stand, including someone who had never used RISC OS before.

Next is the **Drag'n'Drop** stand, the PDF competitor to the Archive magazine you have in your hands. Chris Dewhurst, *Drag'n'Drop*'s editor, has already sold me at least one copy of everything he has to sell, all but his back collection of *Drag'n' Drop* on a USB stick mounted on a bigger-capacity stick than the one I already have. I am tempted, then I remember how many memory sticks I already possess.

Right next door is our very own Jim Nagel who demonstrates his box display unit. This is an appropriately sized clear plastic box which, placed on its side, displays all back issues of **Archive**. Jim the laggard is late as usual but in fairness only slightly.

I beard Jim into a discussion over the use of capital letters, particularly when used in the middle of software names such as Netsurf. I maintain that it is a software writer's decision as to how the software title looks, but Jim says if they want to be in his sentence they'll have to settle for a single initial capital, as in traditional English; if they really want typographic decoration, in other words a logo, they're welcome to buy an ad. We amicably agree to differ.

I talk only a few moments to Richard Brown at **Orpheus Internet** as, not being a BT customer, I cannot use his excellent (as I am reliably informed) ISP services. Every time I see Richard it reminds me how much I and the rest of RISC OS misses Paul Vigay *[who founded Orpheus and wrote so much software]*: how he would revel in all of the new hardware and improvements to the OS.

The Soft Rock Software stand is maintaining its nothing-new-to-buy stance. However, Vince Hudd has put up a new poster, an absolute cracker. He promises an even newer poster for 2015. (What, nothing new for the London show?)

Vince tells me that due to his taking on more customers he has been too busy to work on the manual for **!Webchange**. He is also so busy preparing his camera, tripod and camcorder for recording the show

happenings that I do not even get my normal Webchange tutorial.

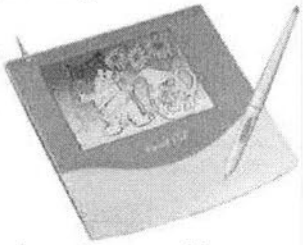
R-Comp crowd

I have to skirt around the normal crowd around the R-Comp stand, resolving to go back and make my purchases later. When I do, though, I find there are two prices for the newly released **!DPGenealogy**: a lower one if you already possess !DPGrecords. I suspect that I do already own DPGrecords but am not sure. Andrew says that I probably have and he will let me have !DPGenealogy at the lower price regardless. When I got home I find an email dated the previous Wednesday (April 23) inviting me as an owner of DPGrecords to purchase the new software at a reduced price.

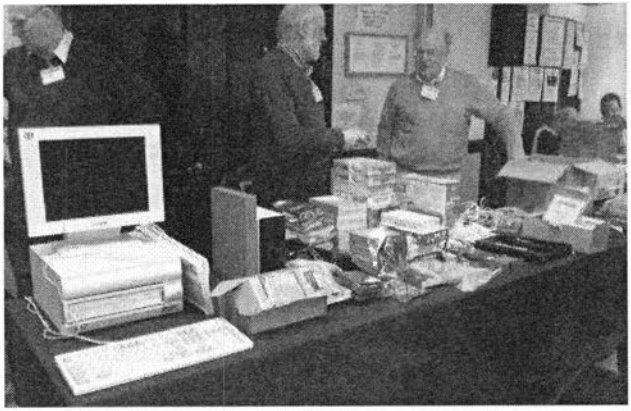
I saw a couple of **ArminiX** owners carrying their new possessions in the manner beloved of Apple laptop owners – quiet ostentatious brandishing of product box all around the hall.

While on my travels I keep bumping into fellow members of the Midlands User Group (Mug) including Stephen Read, now clutching his mobile phone and awaiting the arrival of his new motorbike tyre. This show has turned out to be much more expensive and trying than he envisaged. My Mug friends inform me that a **Mug** stand has been set up in the retro and charity-stall end of the show, manned by John Rickman's wife, Julie.

While I'm talking to Julie, John turns up and I point out a Paintpal Deluxe pressure-sensitive graphics tablet on the charity stall. John says it is not 32-bit and I tell him I have a copy of the 32-bit drivers for same.



He then purchases the software and has spent many hours since trying to make it work on his Iyonix. *[John reports that the tablet was a Windows XP product. Paradise wrote some drivers and packaged it up for Ro. CJE (cjemicros.co.uk) sells the kit for £50 refurbished. —Ed.]*



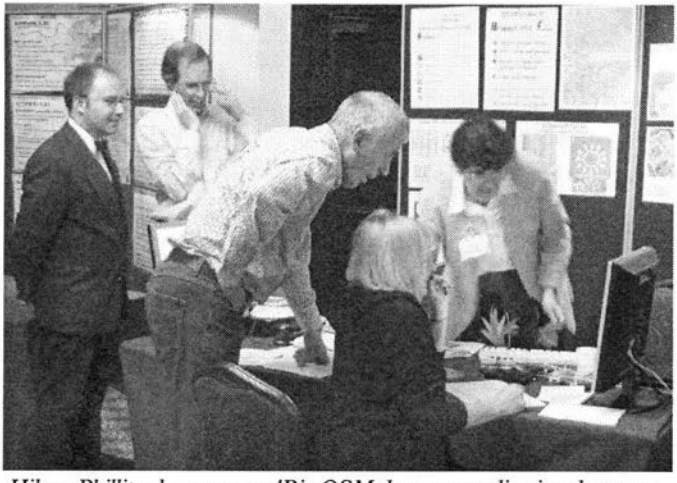
The charity stand selling second-hand equipment donated by showgoers helped raise £929 for the Wakefield Hospice. This total came from the charity stand, from Steve Fryatt's sales of his software and from the raffle – for a Raspberry Pi complete with case, Noobs card and Bruce Smith's book called Raspberry Pi RISC OS System Programming Revealed. *[Photo by Vince Hudd]*

Time out

Normally I take a break at the Navigation Inn, just down the road and across the canal from the Cedar Court Hotel where the show is held, but because the service last year was so slow as to make a sloth look speedy I tried out the British Oak Inn instead. The thing about visiting places like Wakefield is the realization of the slower pace of life – like, for instance, serving beer to thirsty customers. After a long wait a pint arrived so frothy that it had a seven-inch head that still did not reach the top of the glass.

While I still had the desultory attention of the barmaid I asked to try a different beer while the first glass was settling. This turned out better, perhaps because the barmaid's earlier exertions had tired her out, resulting in a much slower pull on the pump handle.

After consuming my 1½ pints I wandered back to the show, adding to my life observations that if all the people in view are drinking wine, it is not just because they like to pretend that they know what they are drinking.



Hilary Phillips demonstrates !RiscOSM, her new application that turns Open Street Maps data into RISC OS drawfiles, to John and Julie Rickman while Martin Würthner and her husband Matthew – the other half of Sine Nomine Software – look on. [Photo by Steve Fryatt]

Maps, data and floppies

Back at the show I revisit Sine Nomine Software and purchase a copy of Hilary Phillips's new **!RiscOSM** and a full latest version of the **!Impact** database manager. I explained to Matthew and Hilary that I required a new CD copy of Impact because I had owned it so long that the original was on floppy discs and thus could not be installed on modern hardware.

We agree a price, Matthew burns me a CD, Hilary sticks a label on it. At home I try the CD and it is blank – well, the error window came up as "CD-rom drive empty" but a quick gander using the excellent CDVDburn tools ascertained that the disc was in the drive but blank. The much apologetic pair posted me a replacement post-haste.

A day well spent

I spend the rest of the day wandering around, watching antique Philips laserdisc machines being repaired, young and not-so-young people playing games on old machines and trying to resist the goodies on the charity stall – an attempt that was not in the least successful, for I purchased not one or two but three removable harddrive carriers. very useful for storage of spare harddrives – or so I convince myself.

My take on this year's Wakefield show was that it was busier and also had newer and younger faces here and there. And I was pleased to see new software on sale.

Rumour has it that next year's show may be held at a different, larger venue. I can hardly wait. Pity you stay-at-homes miss all the fun.

Ron Briscoe *ron.briscoe@blueyonder.co.uk*

Ron lives in Great Barr, Birmingham, and is a member of both Mug (the Midlands User Group) and Wrocc (the Wakefield club). "Other user groups sensibly refused my applications to join."

Wakefield talks

Philip Ingram

A summary of some of the talks in the theatre at the Wakefield show on April 26.

Artworks

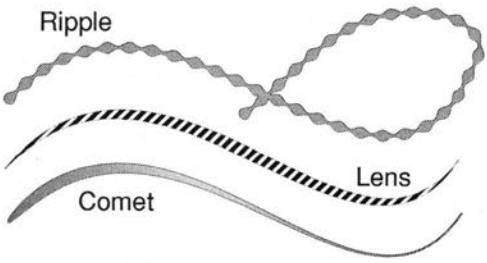
Martin Würthner's session was an unexpected tutorial on features of Artworks. He had not realized he was on the theatre list – and he was first. Nevertheless his talk was well received by the audience.

The "Skew" tool provided a good first topic, as it enabled Martin to remind us that even after transformation, text remains fully editable. The discussion moved on to "Rotate" and looked at how transformations of bitmaps work.

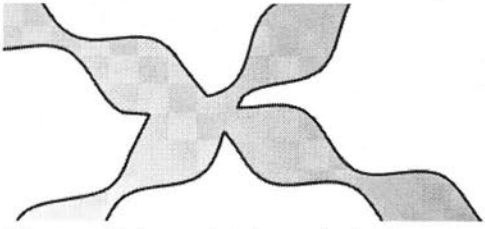
I suspect many present were only too well aware of the immense range of subtle features lurking in Artworks of which they were unaware. Martin introduced us to a "little-known feature (pause) that is so little known that I can't find it in the menu – I always use Shift-F1". It helps normal mortals when you find that even The Master's memory can slip.

Anyway, Shift-F1 enables one to return bitmaps to their original state, though this may not be of much help if they have been grouped before transformation. Vector transformations are, of course, fully undoable.

Martin understandably devoted some time to the "Artistic lines" feature added in the 2012 version, Artworks 2.X2. This



Artworks' new "artistic lines" with variable width profiles can have colour, hatching or graduated fill.



The magnified screenshot shows what happens at the intersection if an artistic line crosses itself.

gives variable-width lines that have outline and fill. The fill can be graduated or hatched. If you have Artworks 2.X2, you can find this feature by selecting a freehand line and then using the "Width profile" menu to select the appropriate shape of line: the illustration shows Ripple, Lens and Comet, only three of the many choices on the menu. Where a single line crosses itself – as in a figure-of-eight, for example – the outlines will join rather than cross.

As ever, the lines are fully editable. Martin showed the drawfile created by exporting an "artistic line". Although theoretically editable, I doubt many would wish to try.

When Artworks exports to PDF, it exports vector descriptions. Therefore the resulting PDF is fully scaleable. Bitmaps are an exception, of course: if a bitmap is

included in the file, Artworks gives options of exporting to a specific size or to a specific resolution.

Artworks has no tool to simulate projecting one object (text, for example) onto the surface of a solid (such as a sphere). The Moulder can, however, produce similar results; Martin used it to create the MW Software logo.

Following questions about the extended time that Artworks takes to import bitmaps, Martin explained that it handles everything internally as a form of Encapsulated Postscript (EPS). For this reason, it converts all bitmaps to 16M colour bitmaps on import. This can be time-consuming but results in accurate rendering.

The RISC OS community knows that any talk by Martin is well worth attending. This view would certainly have been reinforced for those present on this occasion.

RISC OS Open

RISC OS Open Ltd (Rool) was set up by a small group of former Acorn staff who wanted to ensure that the code for RISC OS was not lost, said Steve Revill in his theatre talk. Their initial ambition was simply to provide a repository for the code. Even this ostensibly simple task has taken a great deal of effort, especially in establishing the intellectual-property rights and ownership of parts of the code. This task continues.

In due course it became possible to restart development, for example, to support new hardware built around the Arm processor, such as the Beagleboard. From this came the ability to support the Raspberry Pi, which has changed the market. Over the last couple of years there have been 1½ *terabytes* of downloads from Rool. The Nut Pi collection of RISC OS applications tailored to the Pi has raised £16,000, all of which has gone to the software developers, not to Rool.

Steve emphasized that for the Rool team, RISC OS is a labour of love: "We don't pay ourselves for our time." Paradoxically, as more new people learn about RISC OS, donations from longtime users have fallen.

Work continues (about 50 CVS updates per month), some funded by a bounty scheme (*riscosopen.org/bounty*). Steve drew attention to one of the projects in search of funding: "Filing System improvements (step 2)". ADFS doesn't really understand partitioned discs, so a significant rewrite is needed to enable RISC OS to work in an environment where discs are shared between two or more operating systems.

In response to a question about a stable release of RISC OS Open, Steve explained that a sponsor would be needed to fund the process of validating a fixed release so that it coud be given a stamp of approval.

All in all, it was an interesting and thought-provoking session.

Author's heartfelt plea

Did you follow the debacle in the wider computing world earlier this year about OpenSSL and Heartbleed? It made major commercial organizations at last realize that key open-source projects need proper funding.

[Heartbleed is a security flaw in OpenSSL, the security library used by a great many servers throughout the internet (see heartbleed.com). One expert called it "the worst vulnerability found since commercial traffic began to flow on the internet." Users were urged to change their passwords for any sensitive areas such as internet banking. A cybersecurity company in Finland gave Heartbleed both the name and the logo to raise public awareness of it. —Ed.]

The RISC OS world has no Microsofts or IBMs who can donate the odd £100,000 from the petty cash. It is up to us, the users, to ensure that RISC OS and its key applications get the funding they need.

Newcomers will want a filing system that co-exists easily with other filing systems, preferably allowing read-write access in both directions. They will also expect the platform to have a browser with the same level of support for Document Object Model and Javascript that is provided by Firefox, Chrome and the like.

It's donation time, folks!

Philip Ingram
archive.r44@cheshirenet.org.uk

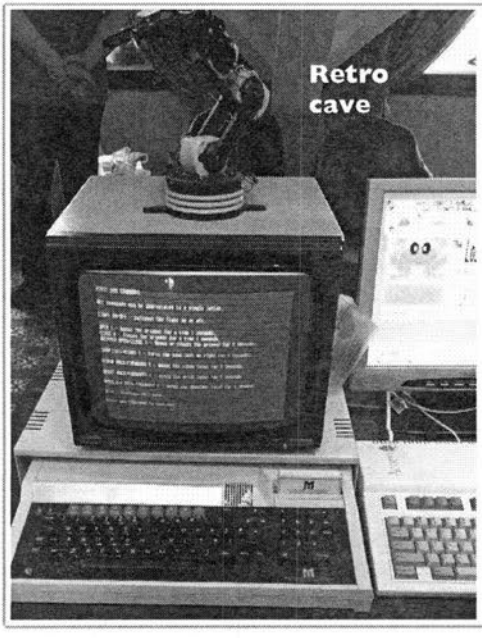
In between walking and singing, Philip runs RISC OS, Windows and various flavours of Linux on an assortment of kit that rarely does what he expects. He lives in Cheshire.

More talks on video

Other talks at the show were given by Andrew Rawnsley of R-Comp, Matthew Phillips of Sine Nomine Software and Chris Evans of CJE Micros.

All the talks, and also the cutting of the RiscPC cake, were recorded on video by Vince Hudd and uploaded to Youtube. Here is a list of them, with clickable links, thanks to the nifty URL-shortening service called "Is Good": *is.gd/wakefieldvideo*

To play these videos on RISC OS you'll need the Murnong utility by Christopher Martin (*Archive 22:9, 22:12*).



A panoply of "retro" stands filled one of the rooms in the show suite. Among them was Flax Cottage Software with a USB robot arm controlled by commands typed into a BBC Micro. The stand also showed progress on cracking software protection in order to preserve old software by copying it from failing cassette tape to CD.

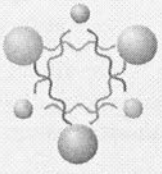
John Dale (jdale@flaxcottage.com) appeals via Archive for anyone wanting to get rid of any 8-bit educational software. Schools "just threw it away". He is especially eager to find work he wrote for Logical Educational Software, distributed by LVL of Sandiacre, Nottingham. Titles are Map References, Classmaster, Lasermaths *and* Nightmare Maths.

Nearby, Jason Flynn's stand was "a complete repair suite" where visitors could bring their sick hardware; he repaired several BBC Domesday laserdisc players on the day. Jess Rowbottom had an "8-bit garage sale". Retro Hardware showed updated add-ons for the Electron and BBC Master computers. And Retro Software ran an all-day competition on games such as Chuckie Egg.

Charm – a practical guide

Pete Nowosad

Part 3 of 3: Semantics



Pete Nowosad first invented the object-oriented Charm programming language back in the 1990s for the Archimedes, and, inspired by the Raspberry Pi, recently recompiled and further developed it for modern Arm processors.

It is suitable for beginners yet is powerful enough for substantial projects. It has similarities to the C and Pascal languages, with unique features of its own and is characterized by "context-free grammar". Gavin Wraith reviewed it in *Archive 23:4*.

Charm (currently v. 2.6.6) is free to download from *charm.qu-bit.co.uk*

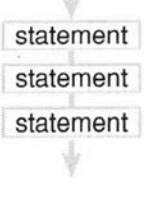
Having covered Charm data types in the last article (*Archive 23:7*), it's my pleasure to welcome you to the third and final article in the series on the Charm programming language. If you've been following the series, you may well have already installed Charm under RISC OS and tried out the printed exercises. If not it's not too late to go back and do so!

In this article I am going to cover some of the syntax and semantics of Charm illustrated by simple examples which I hope will whet your appetite and arm you (no pun intended!) with enough knowledge to start writing your own Charm programs.

Charm is an object-oriented structured programming language. The theorem which provides the theoretical basis of structured programming states that three ways of combining programs – namely sequencing, selection and iteration – are sufficient to express any computable function.

Sequence

In the absence of flow-of-control statements related to selection and iteration, Charm programs execute a line at a time from top to bottom e.g.

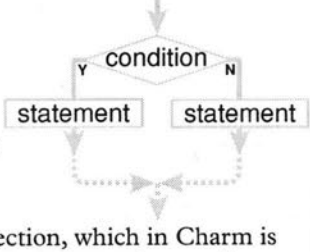



```
int x := 1;
int y := 2;
int z := x + y;
do_this ();
do_that ();
```

However, even in this simple example, `do_this` and `do_that` cause callouts to named procedures that contain their own code (not shown here). Although white space is ignored, usually each line contains a single statement that ends with a semicolon.

One common statement type is the assignment statement, in which the left side is assigned the value of the expression on the right-hand side; the two are separated by the assignment operation `:=`.

Selection



Programs often want to take different courses of action under different conditions. This is handled by selection, which in Charm is provided by the `if` and `case` keywords.

- `if` checks whether the following conditional expression evaluates to `true`, or `false`. If `true`, the next statement (or block of statements enclosed in curly brackets) is executed; if `false`, it is not.

The `if` keyword has an optional

associated `else` keyword, which if present introduces the statement or statements that should be executed if the boolean expression is not `true` e.g.

```
if x = 1
   y := 0;
else
   y := 1;
```

Note the use of indentation to help highlight the flow of control logic.

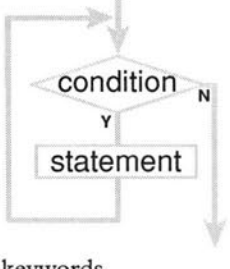
- The `case` keyword introduces a series of clauses that match the value of an integer variable against a number of possible constant values and chooses a block of code to execute e.g.

```
case x
{
1:    handle_1 ();
2:    handle_2 ();
otherwise:
      handle_other (x);
}
```

Note the use of the `otherwise` clause to catch any values that do not match.

Iteration

Sometimes the same code needs to be executed many times within a loop, often to process each member of an array. This is handled by iteration using the `while`, `repeat` and `for` keywords.



- `while` checks whether the following conditional expression evaluates to `true`, in which case the next statement (or block of statements enclosed in curly brackets) are executed until the expression evaluates to `false` – for example,

```
while true loop ();
```

- `repeat` is similar to `while` but the conditional expression is at the end of the loop and must evaluate to `false` for the loop to be repeated, e.g.

```
repeat loop (); false;
```

- `for` allows a control variable to be initialized, incremented and tested all in one statement. For example,

```
for (int i := 0 step i := i + 1
while i < 10) a[i] := 0;
```

initializes the contents of an integer array of size 10 to 0.

Boolean expressions

Boolean expressions appear as part of many flow-of-control statements in Charm. They can be made up of the following comparison operators:

`=`	equal
`#`	not equal
`:=:`	equal (pointer comparison)
`:#:`	not equal (pointer comparison)
`>`	greater than
`<`	less than
`>=`	greater than or equal to
`<=`	less than or equal to

If A and B are boolean expressions, they can be combined using the logical operators:

`A and B`	both A and B must be true
`A or B`	either A or B must be true
`not A`	A must be false

nil

The `nil` keyword occupies a special place in the Charm language and can be used to initialize and test pointers (ref variables). It indicates that the pointer is not currently set up to point anywhere, and an attempt to use it will result in an exception that stops program execution.

Tree recursion

The following program uses tree recursion and the language constructs to draw a tree on the screen.

To make the tree look more realistic some branch parameters have been randomized, for example their length and the angle between them.

For this month's exercise, add some fruit! (Hint: randomly draw some coloured circles at or near branch ends.)

Peter Nowosad *pete_nowosad@msn.com*

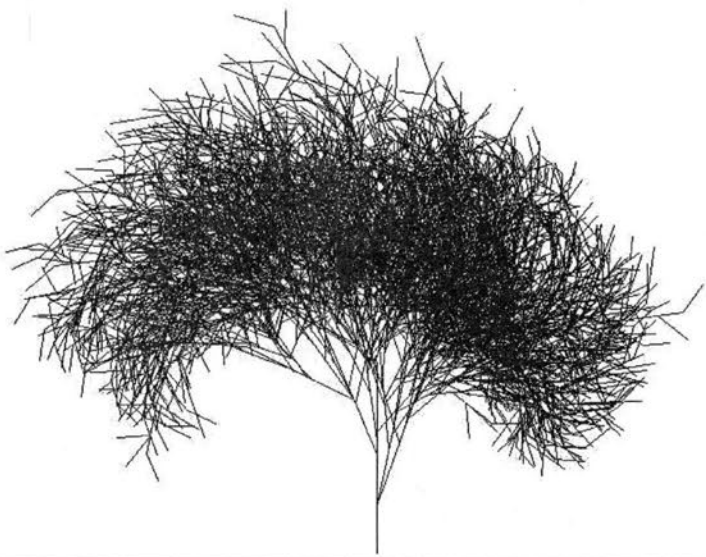
Pete has published an e-book called *Charm Programming on the Raspberry Pi*, available through Amazon for £4.66. He lives in Monmouthshire.

```
import          lib.Maths;
import          lib.Vdu;

module Tree
{
   const
      MODE       = 31,                | display mode          |
      OFFSET     = 30,                | display offset        |
      LEVELS     = 7,                 | branch levels         |
      VARS       = 1000;              | variations            |

   int xmax, ymax, xshift, yshift;     | screen parameters     |

   proc variation (real value, real deviation) real
   {
      return value * (1 + deviation * (0.5 - 1.0 * (Maths.random () mod (VARS + 1))
/ VARS));
   }

   proc branch (int level, real length, real angle, int xs, int ys)
   {
      int xe := xs + length * Maths.fn.cos(angle);
      int ye := ys + length * Maths.fn.sin(angle);
      Vdu.plot (Vdu.P_POINT + Vdu.P_PLOT_F_ABS, xs l_sl xshift, ys l_sl yshift);
      Vdu.plot (Vdu.P_PLOT_F_ABS, xe l_sl xshift, ye l_sl yshift);
      if level > 1 + Maths.random () mod 2
      {
         real scale := variation (0.65, 0.25);
         int branches := level - Maths.random () mod 3;
         if branches <= 0 return;
         real range := variation (1.5, 0.2);
         for int i := 0 step inc (i) while i <= branches
         {
```

```
            real factor := variation (0.5, 0.8);
            if i = branches factor := 0;
            branch (level - 1,
                    variation (length * scale, 0.2),
                    variation (angle, 0.3) + i * range / branches - range / 2,
                   xe - (xe - xs) * factor, ye - (ye - ys) * factor);
        }
    }
}

export proc ~start ()
{
    Vdu.mode (MODE);
    xshift := Vdu.mode_var (MODE, Vdu.MV_X_EIG_FACTO65);
    yshift := Vdu.mode_var (MODE, Vdu.MV_Y_EIG_FACTOR);
    xmax := Vdu.mode_var (MODE, Vdu.MV_X_WINDOW_LIMIT) + 1;
    ymax := Vdu.mode_var (MODE, Vdu.MV_Y_WINDOW_LIMIT) + 1;
    Vdu.g_colour (0, 7);
    Vdu.plot (Vdu.P_POINT + Vdu.P_PLOT_F_ABS, OFFSET l_sl xshift, OFFSET l_sl
yshift);
    Vdu.plot (Vdu.P_RECTANGLE_FILL + Vdu.P_PLOT_F_ABS,
      (xmax - OFFSET - 1) l_sl xshift,
      (ymax - OFFSET - 1) l_sl yshift);
    Vdu.g_colour (0, 0);
    branch (LEVELS, (ymax - OFFSET) / 3, Maths.fn.asn(1), (xmax - OFFSET) / 2,
OFFSET);
}
}
```

Files: see p.2

This code can be downloaded from the Archive website.



RiscOSM: best thing in years

Peter Young

The app RiscOSM has got to be the best thing that's happened in the RISC OS world in the last many years. It is an application for drawing maps from the database of Open Street Maps, saving and printing them as drawfiles. My favourite feature is that I can also use it to overlay the map with tracks that I have recorded using a suitable GPS device.

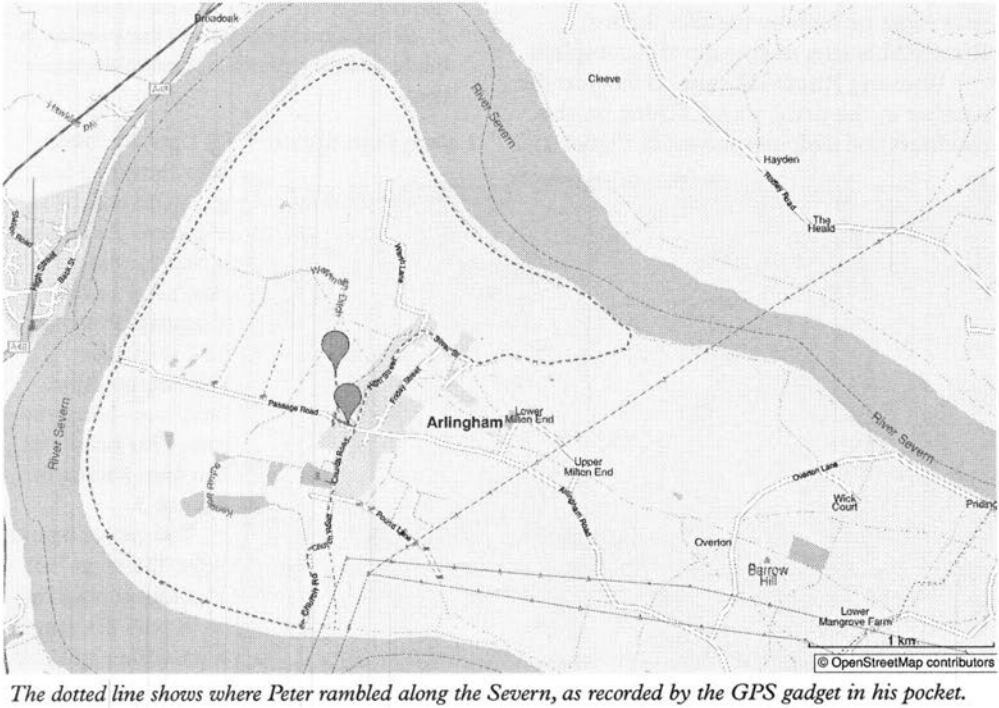
The Open Source Maps project

The correct title for this project is Open Street Map, but the database contains a great deal more than streets. This is an example of "crowd-sourcing": maps are made from the input from many thousands of contributors who submit GPS data, aerial imagery, low-tech field maps and so on, and upload to the Open Street Map site. The resulting database is then freely available to all under the Open Database Licence. (This is unlike, for example, the Ordnance Survey data, which is zealously protected by copyright.)

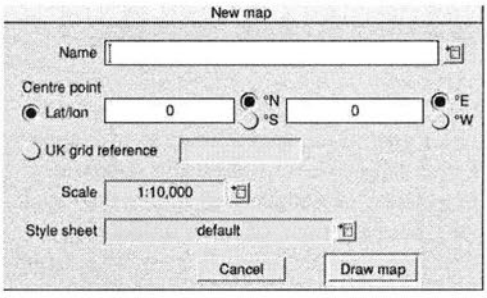
For more information, see Wikipedia (*en.wikipedia.org/wiki/Openstreetmap*) or *openstreetmap.org*. The latter site requires Javascript, so RISC OS browsers (and small screens) will have better luck using *mobilemap.petschge.de* as a way in. A general introduction at *wiki.openstreetmap.org* includes guidance on using the interface.

The app

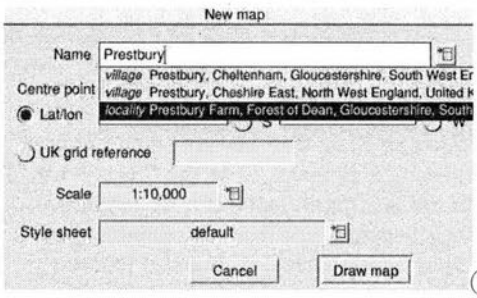
RiscOSM is available from Sine Nomine



The dotted line shows where Peter rambled along the Severn, as recorded by the GPS gadget in his pocket.



①



②

Software for £20 on a CD or for £18 as a download. I have told Hilary and Matthew Phillips at Sine Nomine that I would have happily paid more for it!

The app comes with the Open Street Map data for Britain and the Netherlands, though the data for more countries may well become available in time. The data for Britain weighs in at 586 megabytes, so if you download this you will have plenty of time for a cup of tea or two! The application directory containing the map data must be seen by the filer before RiscOSM is run, or the app will complain.

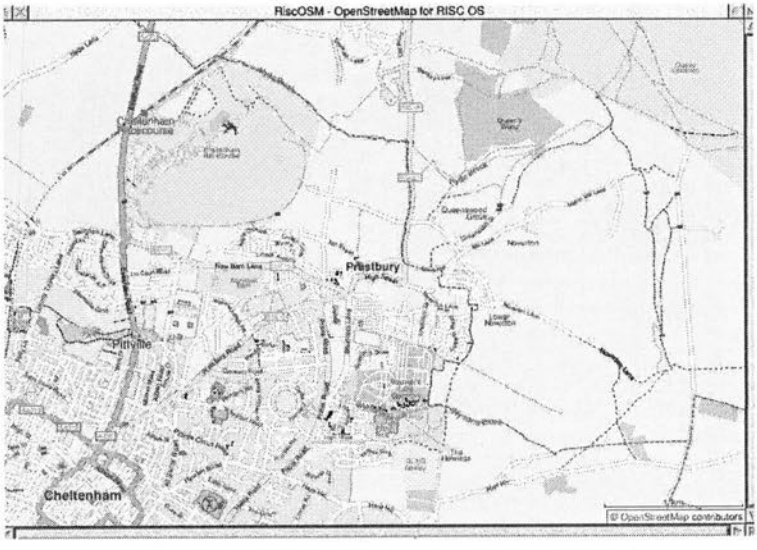
Running RiscOSM puts its icon on the iconbar in the usual way. Clicking on this produces the dialogue shown in Figure 1.

Searching

Quoting the excellent RiscOSM helpfile (many thanks, Matthew and Hilary):

> There are several ways to select the map area:
> **1** Type the latitude and longitude of the centre of the map into the boxes provided
> **2** For UK locations, enter the OS grid reference in the box provided
> **3** Type a place name into the box at the top of the window: results will be displayed from which you can select
> **4** Select a bookmark you have previously made from the menu alongside the name box.

I always use option 3 – if I put Prestbury into the Name box, I get what is seen in Figure 2. As I'm not a rich footballer I don't live in the Cheshire Prestbury, so I select the Gloucestershire one, and then Draw map. This produces the map shown in Figure 3.



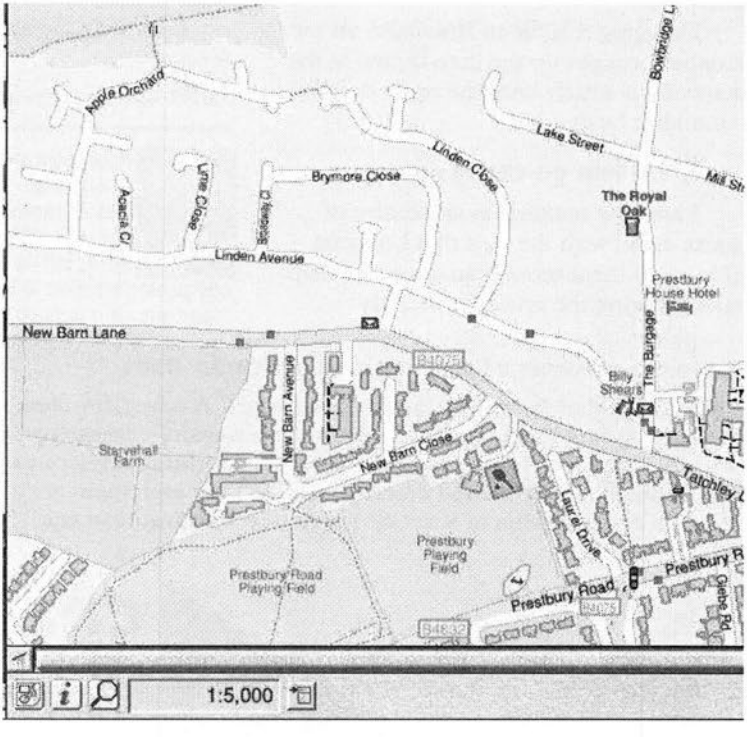
③

You can of course print the map, but I've found it easier to export the map as a drawfile and print it using Sine

Nomine's excellent, and free, !Drawprint.

What's there?

Many things can be done with this map: you can drag it around, scale it up and down, and, if the map database has the relevant information, hovering the pointer over a location will give information about it at the bottom of the map. For instance, if I zoom in on the map as shown in Figure 4, and hover over the Royal Oak (our local), I am told not only that it's a public house, but also that I can control-click on the location to bring up the pub's website. The dots shown on Linden Avenue and New Barn Lane are bus-stops, and control-clicking on these even brings up the times of the next few buses from these stops (but unfortunately not updated for when the bus is running late).



④

The map can be then exported as a drawfile or a sprite, or in a format suitable for importing into Thomas Milius's !Mapview. I haven't used Mapview, so maybe someone else could write about this app?

Importing GPS tracks

I do a lot of walking with groups and with a particular friend, but I seem to spend so much time on these walks talking to people that I forget to notice where we're walking. I was intrigued to see in RiscOSM's helpfile that a track exported from a suitable GPS device can be used to draw a map of the area walked and superimpose the route that I walked. I accordingly bought a Garmin Oregon 600 handheld GPS device (for a lot more money than RiscOSM!). This device records the route along which it is carried, as a GPX file (see *en.wikipedia.org/wiki/GPS_Exchange_Format*) – all the data one can think of concerning the walk.

So I duly went rambling with the Garmin gadget in my pocket recording the route.

At this point, RISC OS won heavily over Windows, I'm glad to say. Connecting the Garmin to Windows, which I thought I would have to do, results in one of those pesky "Your device may not work

properly" messages, and I could not access the folder with the GPX data in it. Connecting it to my Armini, however, the whole of the contents of the Garmin became visible, and I was able to drag the relevant file across to the computer.

Dragging this file to RiscOSM on the iconbar brought up the map shown at the start of this article with the route overlaid – couldn't be easier!

Files: see p.2

The maps used to illustrate this article can be downloaded as files from the Archive website: in colour and you can magnify.

Now we can go there again!

I am now making up an archive of walks done, with the idea that I may be able to do them more than once, the map remembering the route for me. My walking companion, who is not easily impressed, least of all by things technical and electronic, was mightily impressed with what I can do with RiscOSM, and has been telling lots of people in the walking groups about it. Pity that nobody knows what RISC OS is!

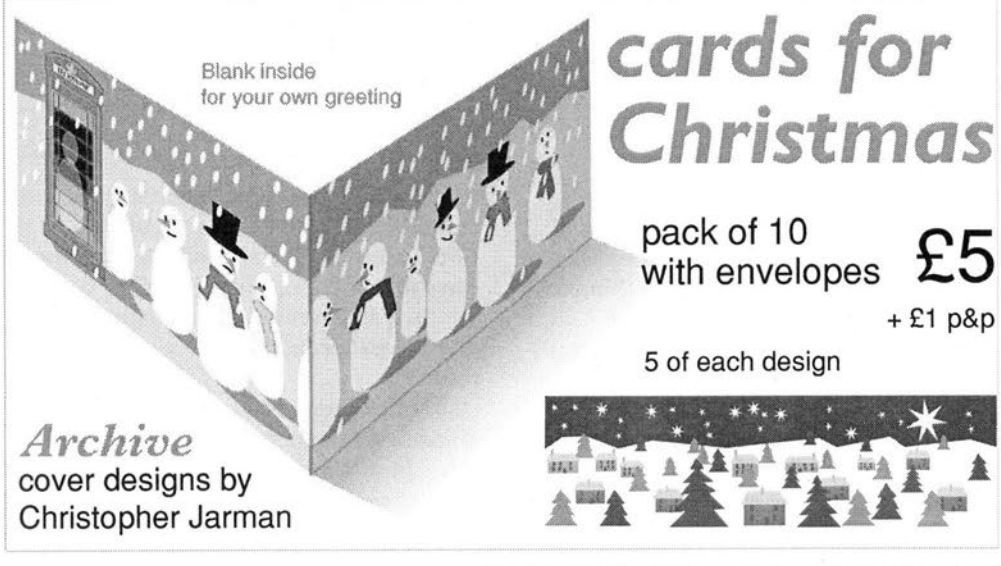
Definitely the application of the year for me!

Peter Young *pnyoung@ormail.co.uk*

Peter was an anaesthetist in Cheltenham, and is now into his 11th year of retirement. His lovely wife died from the effects of multiple sclerosis in 2010, but he is happy that the walking companion referred to is an attractive widow! A friend-who-is-a-lady rather then an lady-friend.

Latest revisions of application and map data

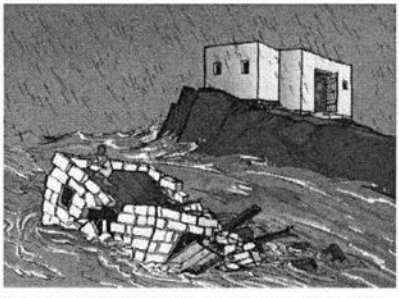
- **Version 1.08 of RiscOSM, dated 2014-Aug-30, is a free download for registered users.**
- **Newly updated map data appeared on the website – *sinenomine.co.uk/software/riscosm* – in early October. Besides Britain and the Netherlands, zipfiles can be downloaded to cover Austria, Switzerland and Australasia. Italy and Spain are available on CD only.**
- **A free demo version of RiscOSM is also on the download site.**



Building on a solid foundation

Gerald Fitton

Emulation 2 – Red Squirrel



Therefore whosoever heareth these sayings of mine, and doeth them, I will liken him unto a wise man, which built his house upon a rock:

And the rain descended, and the floods came, and the winds blew, and beat upon that house; and it fell not: for it was founded upon a rock.

Matthew 7:24–25

In my previous article (*Archive 23:8*) I encouraged you to build a simple, bare-bones, RISC OS 3.70, emulator based on the Red Squirrel emulator created by Graeme Barnes more than a decade ago. This emulator enables a Windows PC to mimic RISC OS running on Arm hardware. *[The original Red Squirrel ran only on Windows; much later versions came along to run on Apple hardware. —Ed.]*

In this article I will show you how you can build upon that solid foundation to make a completely up-to-date RISC OS 4.02 emulator containing the most recent !System modules. Because you will upgrade it to include these latest !System modules, you will find that the new versions of RISC OS applications (such as the 32-bit version of Pipedream) will run at high resolution in this emulator.

Resources

Summarizing from my previous article, on your Windows machine, somewhere within My Documents you created a folder called RedSquirrel. Inside RedSquirrel you created folders called Resources, Testbuild-01 and Tools. You built a simple RISC OS 3.70 emulator inside Testbuild-01. What I suggest that you do is this: within your Resources folder, create a new folder called RO370; move into RO370 all the resources you used to build your RISC OS 3.70 emulator.

Create a new folder called RO402R within Resources; you will fill this with the resources you need in order to build a completely up-to-date RISC OS 4.02 emulator.

You can copy the Red Squirrel hardware emulator from RO370 to RO402R or you can go to the Red Squirrel website *redsquirrel.fsnet.co.uk/redsquirrel.html* and click on the downloads button to download it again. (This button is in the guise of a floppy-disc icon on the left of the iconbar.) Alternatively, click on downloads which you'll find alongside the date 2012-10-28. You will be redirected to a page from which you can download version 0.6 (the last available free version) by clicking on the link RedSquirrel0.6.zip. Save this Windows compressed zip within your RO402R folder.

You may have the RISC OS 4.02 roms already. If you don't have them you can buy them for £5 as a download from *e-junkie.com/43789/product/58699.php*. Create a folder called riscos402 inside RO402R and place the roms (unzipped) in riscos402.

All that remains is to decide what to do about the Boot Resources. It is possible to start with the Uniboot resources which you downloaded from the 4corn website and add to this all the files necessary to

run RISC OS 4.02. However, rather than do this fiddly job, I suggest that you use the resource called RO4 Install which can be downloaded from *riscos.com/ftp_space/400* – it is the second item down the page.

Alternatively, you can go to *riscos.com/ftp_space/400/files/ro4install.zip* and directly download the zip file (which has been compressed in RISC OS) called ro4install.zip. Save this zip in your RO402R folder.

The Boot Resources in ro4install.zip are quite old (July 1999) and many of the more recently upgraded RISC OS applications (such as the 32-bit version of Pipedream) will not run with these !System modules. However, an upgrade to the !System is available from *riscosopen.org/content/downloads/other-zipfiles* (third item down the page) or directly from *riscosopen.org/zipfiles/misc/PlingSystem.zip*.

Save the Plingsystem.zip (it's been compressed in RISC OS) into your RO402R folder.

Now you have all the resources you need to build an up-to-date, RISC OS 4.02 emulator. The only other modification needed is to add a RPC-SA RISC OS 4.02 model to the Model folder of the Red Squirrel emulator. This can be based on the 3.70 model but, instead, to make it easier, I have posted this model.cfg file on the Archive website.

Windows folders

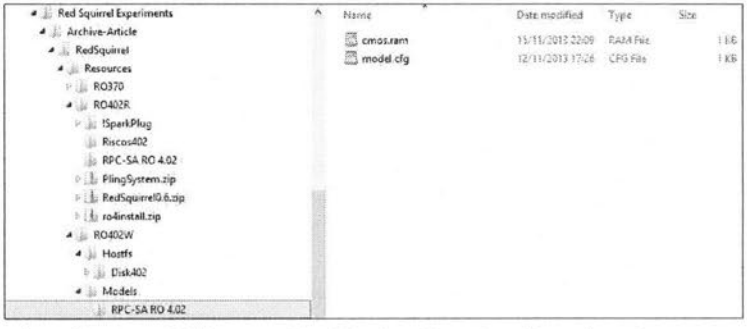
Let's recapitulate for a moment.

The first screenshot (1) shows the structure I have used on my Windows machine.

In my Red Squirrel Experiments.Archive Article folder you will see that I have a Resources folder within which I have RO402R containing all the Resources necessary for building the completely up-to-date RISC OS 4.02 Red Squirrel emulator. The hidden content of RPC-SA RO 4.02 contains a version of model.cfg that has been modified to take account of the fact that we want to pick up RISC OS 4.02 roms from within Romsets and we want to pick up Disk402 from within HostFS.

RPC-SA RO 4.02 model

The Model RPC-SA 4.02 contains a file called model.cfg. You need to change two lines of it from the model.cfg of RPC-SA, RISC OS 3.7. The model.cfg for RISC OS 4.02 is a copy of that for RISC OS 3.70 but edited by hand so that [Rom] and [HostFS] have different values. The differences in the RISC OS 4.02 version from the 3.70 version are:



1

```
[Rom]
filename = "Romsets\\RISCOS402"
[HostFS]
podule = 0
mount0 = "HardDisk 'Hostfs\\Disk402' bootopt=2"
```

In addition to these two changes I have increased the ram so that both blocks of ram are 64m (64M) so that the total ram is 128M plus 2M of V-ram making 130M.

Apart from these lines, the model.cfg file is identical for RISC OS 3.70 and 4.02.

A shortcut

In my previous article I stressed that files compressed from within RISC OS have to be extracted within RISC OS. With the exception of the Red Squirrel hardware emulator which you have saved as RedSquirrel0.6.zip all the resources have been compressed from within RISC OS and therefore the files have to be extracted from within a RISC OS environment using, for example, !Sparkplug.

What I have done to make it easier for you is that, within my RISC OS environment, I have have extracted all these files, then I have recompressed them from within Windows.

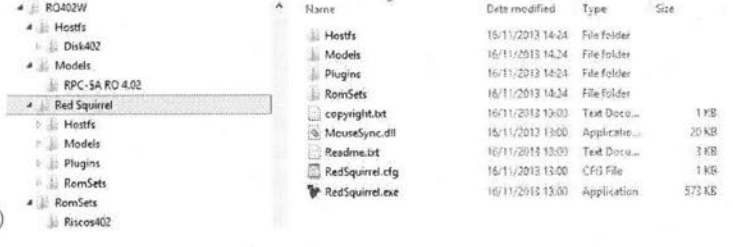
In the folder RO402W on the Archive website you will find all the resources of RO402R but in a version that can be extracted from within the Windows environment. This makes building the emulator considerably easier.

Files: see p.2

In the RO402W folder you will find three folders. These are: HostFS, Models and Redsquirrel. On my own machine I have a fourth folder called Romsets which contains my RISC OS 4.02 roms.

If you want to build a RISC OS 4.02 Red Squirrel emulator in about five minutes, then download from the Archive website the folder RO402W and then open it from within Windows.

The screenshot (2) below shows what I see within RO402W when I view it in Windows Explorer. RO402W contains every file that you will need in order to build a high-resolution, up-to-date, RISC OS 4.02, Red Squirrel emulator – except for the roms.

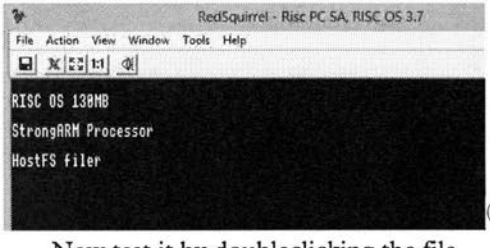


(2)

The 5-minute build

- Create a folder called Testbuild-02; it is in this folder that you will build your emulator.
- Copy the contents of the Redsquirrel folder into Testbuild-02.
- The folder Romsets contains a folder called Riscos402 containing your RISC OS 4.02 roms. Copy it to the Romsets folder of Testbuild-02.
- The folder Models contains a folder called RPC-SA RO 4.02. Copy it to within the Models folder of Testbuild-02.
- Finally, the HostFS folder contains Disk402 which contains all the Boot Resources you need for an up-to-date version of a RISC OS 4.02 emulator. Copy Disc402 into the HostFS folder of Testbuild-02.

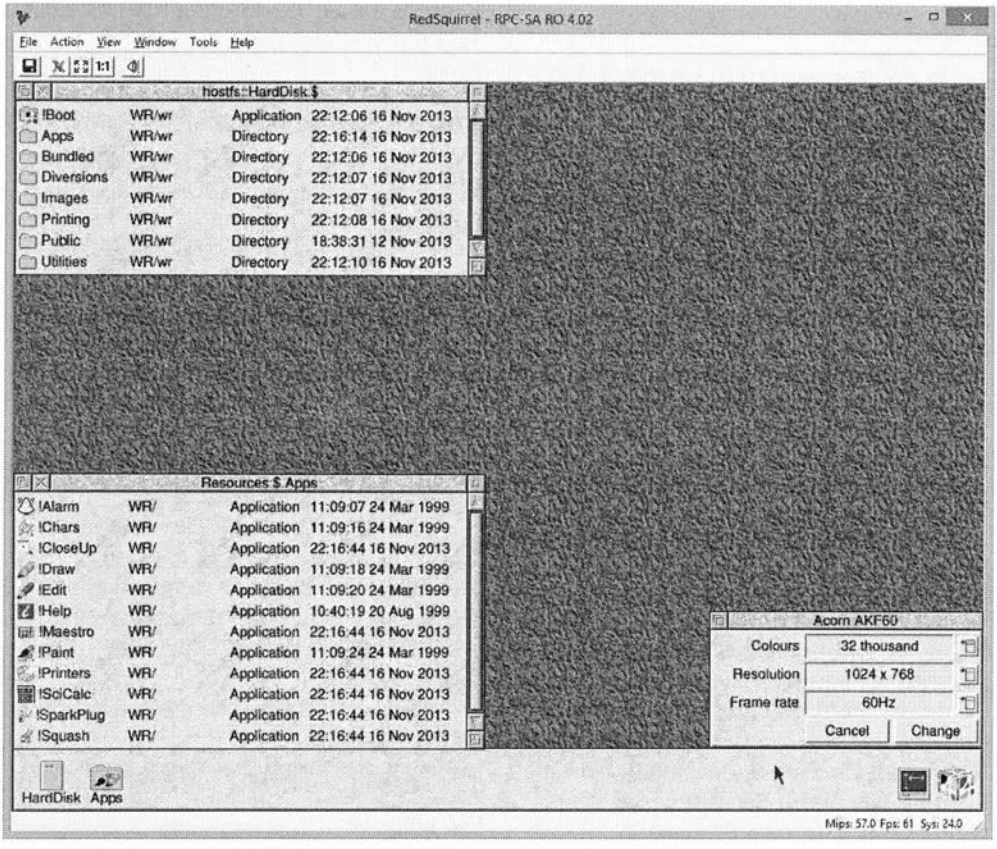
That's it! Did the five steps take you all of five minutes?



(3)

Now test it by doubleclicking the file Redsquirrel.exe. This screenshot (3) shows what you will see as it flashes by. When the program has settled down you will be able to bring up the menus shown in the screenshot on the next page (4).

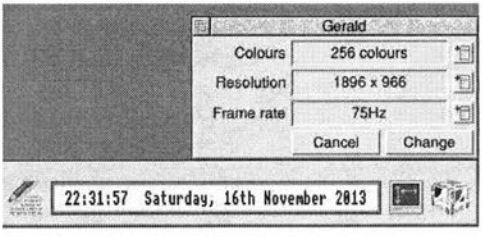
This RISC OS 4.02 Red Squirrel emulator is displaying 32 thousand colours


RedSquirrel - RPC-SA RO 4.02
File Action View Window Tools Help
hostfs::HardDisk.$
!Boot WR/wr Application 22:12:06 16 Nov 2013
Apps WR/wr Directory 22:16:14 16 Nov 2013
Bundled WR/wr Directory 22:12:06 16 Nov 2013
Diversions WR/wr Directory 22:12:07 16 Nov 2013
Images WR/wr Directory 22:12:07 16 Nov 2013
Printing WR/wr Directory 22:12:08 16 Nov 2013
Public WR/wr Directory 18:38:31 12 Nov 2013
Utilities WR/wr Directory 22:12:10 16 Nov 2013
Resources:$.Apps
!Alarm WR/ Application 11:09:07 24 Mar 1999
!Chars WR/ Application 11:09:16 24 Mar 1999
!CloseUp WR/ Application 22:16:44 16 Nov 2013
!Draw WR/ Application 11:09:18 24 Mar 1999
!Edit WR/ Application 11:09:20 24 Mar 1999
!Help WR/ Application 10:40:19 20 Aug 1999
!Maestro WR/ Application 22:16:44 16 Nov 2013
!Paint WR/ Application 11:09:24 24 Mar 1999
!Printers WR/ Application 22:16:44 16 Nov 2013
!SciCalc WR/ Application 22:16:44 16 Nov 2013
!SparkPlug WR/ Application 22:16:44 16 Nov 2013
!Squash WR/ Application 22:16:44 16 Nov 2013
Acorn AKF60
Colours 32 thousand
Resolution 1024 x 768
Frame rate 60Hz
Cancel Change
HardDisk Apps
Mips: 57.0 Fps: 61 Sys: 24.0

④

at a resolution of 1024×768 pixels. With the 2M of V-ram it is running, it is capable of a higher resolution than this but I wanted to produce a display that was within the range of most monitors used on a Windows machine.

The screenshot below (5) shows that I use 1896×966 in my Red Squirrel emulator.



⑤

Unzipping in Risc os

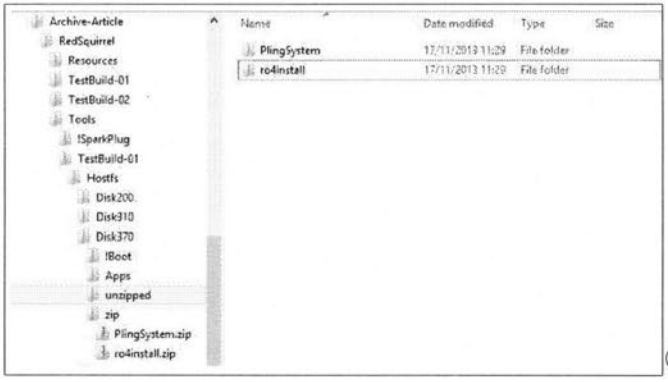
Suppose that you don't want to use the shortcut method that I provided in the resource RO402W. What is the easiest way to unzip within Risc os the Boot Resources contained within the compressed zip archives, ro4install.zip and PlingSystem.zip?

There are many ways but I want to take you back to the very simple, bare-bones, Risc os 3.70 Red Squirrel emulator called Testbuild-01 that we built in my previous article (*Archive 23:8*). It can be used as a tool to extract from within Risc os any zip archive that was compressed on Risc os.

Have a look at screenshot (6) here. You

will see that I added Testbuild-01 to the Tools folder, and within Testbuild-01 I created a couple of new folders – imaginatively called zip and unzipped – within the folder called HostFS.Disk370.

I copied the two zip archives, ro4install.zip and PlingSystem.zip, into the zip folder. I shall use Testbuild-01 to unzip these into the unzipped folder.

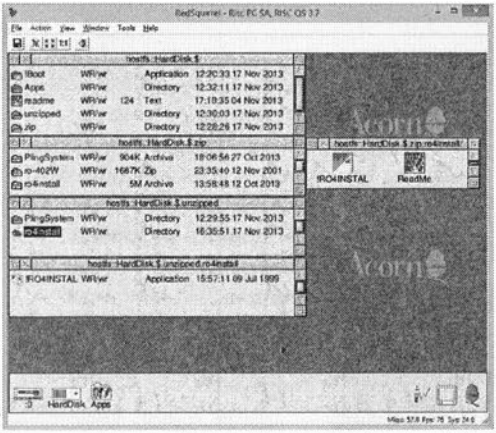


⑥

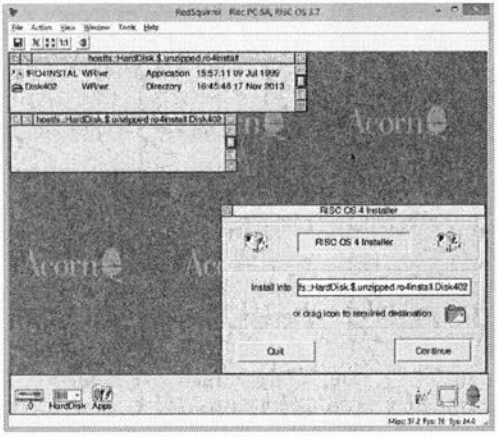
Unzipped Disk402

The set of three screenshots (7, 8, 9) here show snapshots of various stages in the creation of the Boot Resources from ro4install into the Disk402 folder.

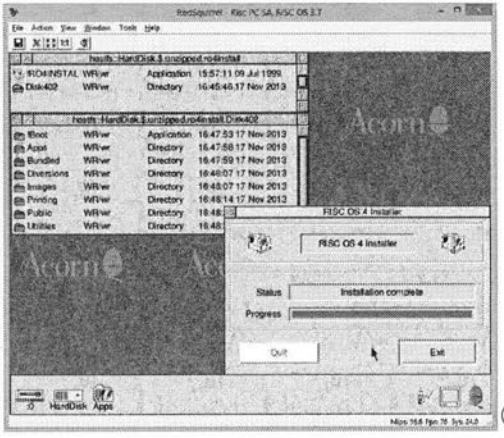
- Drag the zipped ro4install to the !Sparkplug icon on the iconbar. Then drag !RO4INSTAL from inside the zip into the unzipped folder. Doubleclick !RO4INSTAL and choose to install into the newly created Disk402 folder.
- Install not only the !Boot files but also all the RO4 Apps and utils until the installation within the folder Disk402 is complete as shown in the third of these three screenshots (9).
- Now go into Windows and copy the whole folder Disk402 and its contents into the HostFS folder of Testbuild-02.
- Run Testbuild-02 and, with a little effort,



⑦



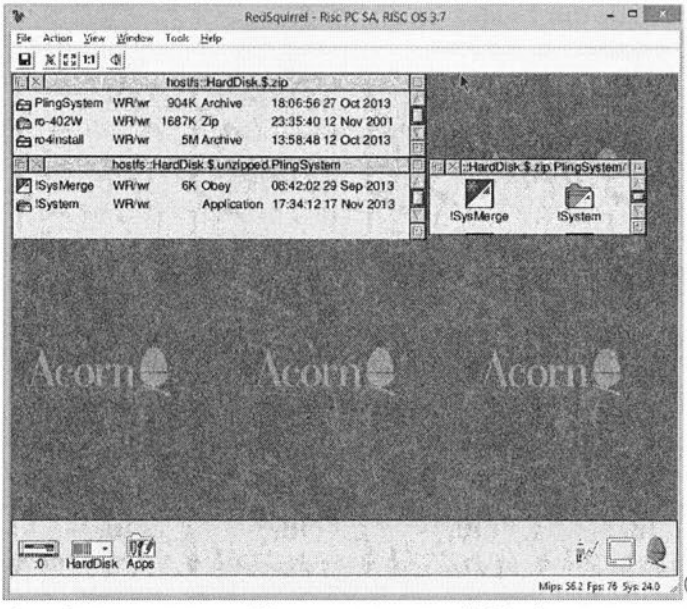
⑧



⑨

you will see what is shown in the next screenshot (&A).

I would like you to notice that this version of RISC OS 4.02 is a (frozen in time?) 1999 version. For example, the module SharedCLibrary is version 4.87 (1999-Apr-23).

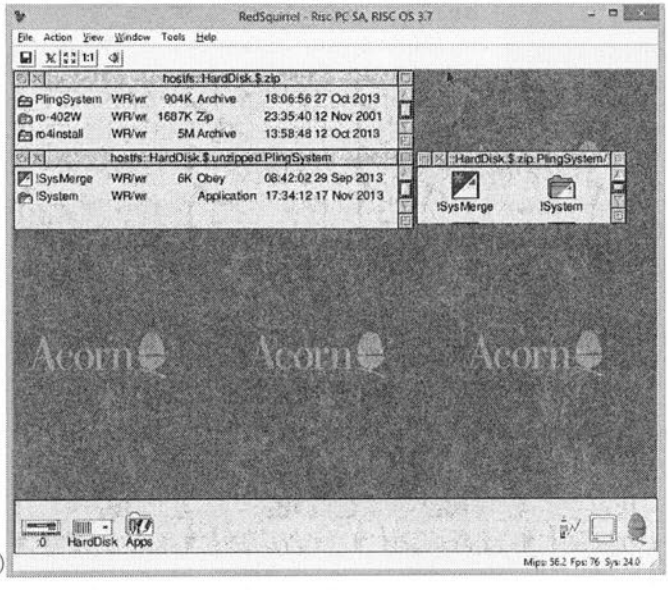

RedSquirrel - Risc PC SA, RISC OS 3.7
File Action View Window Tools Help
hostfs::HardDisk.$.zip
PlingSystem WR/wr 904K Archive 18:06:56 27 Oct 2013
ro-402W WR/wr 1687K Zip 23:35:40 12 Nov 2001
ro4install WR/wr 5M Archive 13:58:48 12 Oct 2013
hostfs::HardDisk.$.unzipped.PlingSystem
!SysMerge WR/wr 6K Obey 08:42:02 29 Sep 2013
!System WR/wr Application 17:34:12 17 Nov 2013
::HardDisk.$.zip.PlingSystem/
!SysMerge
!System
:0 HardDisk Apps
Mips: 56.2 Fps: 76 Sys: 24.0
(A)

Update using PlingSystem

Drag the PlingSystem zip to the !Sparkplug icon in order to open the zip. Drag the two icons !Sysmerge and !System into the unzipped.PlingSystem folder (B).

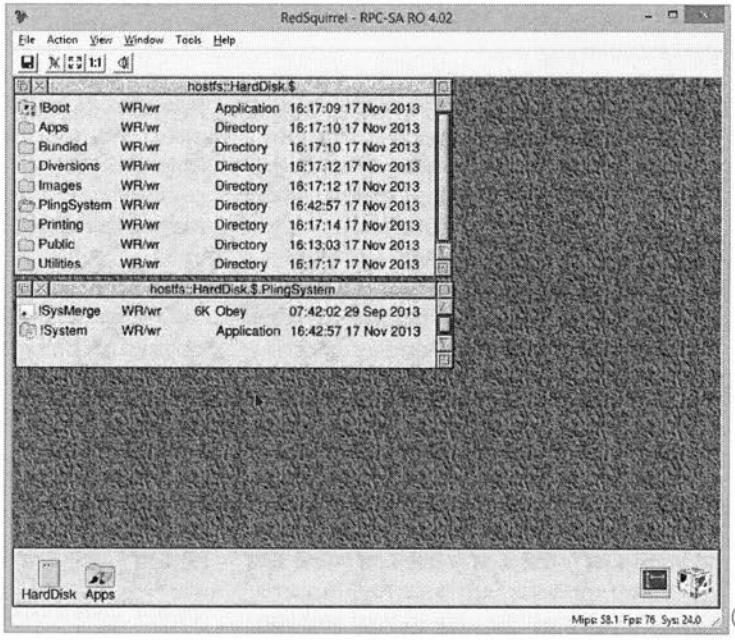
Close this Testbuild-01 tool and return to Windows. In Windows, copy the folder PlingSystem containing the !Sysmerge and !System which you have just unzipped so that it is inside the Disk402 folder of Testbuild-02.

Now start up your 1999-vintage Testbuild-02; open the PlingSystem folder that you have just copied to Testbuild-02; doubleclick !Sysmerge to run this obeyfile. You will think nothing has happened because it runs so quickly: all the system modules will have been upgraded to the version which is contained in PlingSystem.

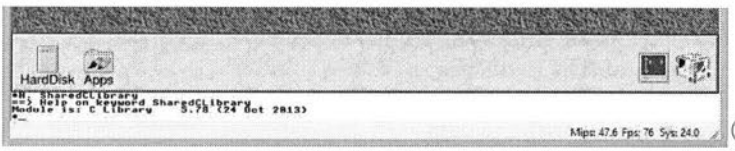

RedSquirrel - Risc PC SA, RISC OS 3.7
File Action View Window Tools Help
hostfs::HardDisk.$.zip
PlingSystem WR/wr 904K Archive 18:06:56 27 Oct 2013
ro-402W WR/wr 1687K Zip 23:35:40 12 Nov 2001
ro4install WR/wr 5M Archive 13:58:48 12 Oct 2013
hostfs::HardDisk.$.unzipped.PlingSystem
!SysMerge WR/wr 6K Obey 08:42:02 29 Sep 2013
!System WR/wr Application 17:34:12 17 Nov 2013
::HardDisk.$.zip.PlingSystem/
!SysMerge
!System
:0 HardDisk Apps
Mips: 56.2 Fps: 76 Sys: 24.0
(B)

Now reboot Testbuild-02 so that the emulator sees all the upgraded modules instead of the 1999 modules. You can test that you do have the most recent modules by tapping F12 (or Ctrl-F12 to get a taskwindow) and, at the * prompt type `*help SharedCLibrary` and tap Return. You will see that the SharedCLibrary has been updated to Version 5.78 (2013-Oct-24).

From time to time the modules contained in PlingSystem are updated, so do not be surprised if you find you have a more recent CLib than I have here in my two screenshots (C and D).


RedSquirrel - RPC-SA RO 4.02
File Action View Window Tools Help
hostfs::HardDisk.$
!Boot WR/wr Application 16:17:09 17 Nov 2013
Apps WR/wr Directory 16:17:10 17 Nov 2013
Bundled WR/wr Directory 16:17:10 17 Nov 2013
Diversions WR/wr Directory 16:17:12 17 Nov 2013
Images WR/wr Directory 16:17:12 17 Nov 2013
PlingSystem WR/wr Directory 16:42:57 17 Nov 2013
Printing WR/wr Directory 16:17:14 17 Nov 2013
Public WR/wr Directory 16:13:03 17 Nov 2013
Utilities WR/wr Directory 16:17:17 17 Nov 2013
hostfs::HardDisk.$.PlingSystem
!SysMerge WR/wr 6K Obey 07:42:02 29 Sep 2013
!System WR/wr Application 16:42:57 17 Nov 2013
HardDisk Apps
Mips: 58.1 Fps: 76 Sys: 24.0

C



D

What is possible?

You have built a totally up-to-date RISC OS 4.02 StrongArm Red Squirrel emulator tat you can run on a Windows machine.

Because the VirtualRPC emulator sold by Virtual Acorn is built on the foundation of Red Squirrel, the booklet by the chaps at T.O.M.S. will be useful to you. (Download *VirtualRPC in Use* free from *virtualacorn.co.uk/support/vrpcinuse* as a PDF: besides the 2012 edition there is a set of supplementary leaflets up to 2014 – more than 120 pages in all.) In it you will find many hints and tips that apply to the Red Squirrel emulator you have built just as well as to the commercial VirtualRPC.

If you already have a VirtualRPC then, from within VirtualRPC, you can zip up your programs such as Pipedream or Ovation using !SparkFS and copy the zipped archive into your Red Squirrel emulator. When you unzip them in Red Squirrel they will run. You can zip up any data such as Impdoc files [Impression documents] you have created in VirtualRPC and copy them across to Red Squirrel. Of course you can work on the files in Red Squirrel and then transfer the modified data back into VirtualRPC.

If you have two Windows machines, each with Red Squirrel installed, then you can copy zipped archives of almost anything between the two. If you are really clever with networks then you can create a "mount" on one (the term is explained in *VirtualRPC in Use* by T.O.M.S.) that accesses files on the other machine via your home network. If you are unable to do this then you can at least upload (using a Windows utility) from one machine to somewhere in the Cloud (a website, for example) and download from there to your other machine.

You can zip up all your fonts and

install them on your second incarnation of Red Squirrel.

Perhaps you have a hardware RISC OS machine such as a RiscPC with a floppy drive. If so, then with very few exceptions you will be able to zip up everything from applications to user data and transfer these to your newly built Red Squirrel. I formatted a few floppies (MS-DOS) on my trusty RiscPC; I bought an external floppy disc drive for my Windows machine (it plugs into a USB port) and I copied everything I wanted into Red Squirrel.

Perhaps you want to make a new display mode for your monitor. The site hosted by CJE Micros – *cjemicros.co.uk/micros/resources* – is a place from which you can download a utility called "32-bit Makemodes". Since you have installed all the 32-bit modules into your Red Squirrel emulator, you will be able to load and run this utility. MDF files are merely textfiles, so they can be edited and copied between incarnations of Red Squirrel. You will find all your monitor-definition Files in the subdirectory with the path HostFS:$.!Boot.Resources.Configure.Monitors.

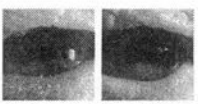
In summary

If you already have VirtualRPC and you need a second emulator but can't justify the cost, then you will find this Red Squirrel emulator has enough features in common with VirtualRPC to make it an easy-to-use second emulator.

Next article

In my next article I will describe how to build an RPCemu RISC OS 4.02 emulator using nothing except resources that are readily available on the internet.

Gerald Fitton *gerald@archivemag.co.uk*



Gerald had a cataract extracted from his left eye in November. These are before-and-after pictures of the eye. Does it look different after the operation? Look carefully at the "southwest" of the iris circumference and you can see a flat spot where a tiny incision was made. Gerald's advice "to anyone and everyone is to have the cataract operation sooner rather than later" – before the cataract hardens and makes the job more difficult.

Archive DVD or CDs

The entire contents, fully indexed, of the past 22 volumes of Archive on a DVD – as plain text, as HTML and as the original Impression files.

For users still without a DVD drive the collection is also available on a pair of CDs. Contents are identical, except that the DVD has room for all the issues of volume 22 as PDF.

DVD22 or CD22 costs £21 – or £11 as upgrade from the previous edition.
(Unless you specifically request special despatch, upgrades will be posted with your next magazine.)

*Please send cheque to "Abbey Press" at address on back cover, or pay via direct bank transfer with an email to say whether CDs or DVD – sortcode **08-92-50** (Co-op, Skelmersdale), account **7072 6592** (Abbey Press).*

Mac Matters

Mark Stephens

I write as a user of RISC OS, Mac and Linux, running various emulators on my Mac and connecting my machines together.

Calls for new hardware

Lots of potentially interesting hardware updates to report in this issue.

As a professional software developer, I use version control. Once I have written some code to fix a bug or add a feature to the software, I officially include it in the list of changes in the version-control system. Our two test computers then run a barrage of tests on it: does it still compile, does it provide the same results, work the same, follow the same coding rules, etc. Because each change is small (sometimes only a single line has changed, or 30 at most) and each is tested on its own, it is really easy to see where we have introduced a problem.

This requires a lot of computing power and our machines have been struggling, so I have upgraded one of the machines.

Dear, dear Mac Pro

The Mac Pro is not cheap (and you should not play with one if you want to continue to be happy with your old or cheaper Mac). They can have 4 to 12 cores (as you add more cores, the speed each core will run up actually drops slightly, so you want 12 cores only if the software is designed to use them). We have a 6-core machine with 32 gigs of memory.

All the Mac Pros come in a shiny, small, stylish black tower case and are very quiet. The machine does not generate a lot of heat (unlike even the latest Mac laptops, which get very hot and should not be on your lap). It has fast memory, fast chips. fast SSD drive, fast everything really. Did I tell you it was fast? I have it running 24×7. If you want the ultimate desktop machine, this is probably it at the moment.

Pi upgrade is cheaper

At the opposite end of the spectrum, a new model of the Raspberry Pi is available. This is more of an incremental upgrade, so it is known as the Model B+ (another allusion to the BBC Micro background of the people behind the Pi).

It has more USB ports, an internal redesign and now uses a smaller SD card. But it does not offer more processing power. RISC OS has been updated to run on it as well.

Version control

"Revision control" is another name for version control – an essential aspect of any big software project, especially if it involves a team of coders. Specialized applications to handle the task include **CVS** (Concurrent Versions System) or **OpenCVS**, which are licensed under the Gnu General Public Licence. **Subversion** is an open-source system inspired by CVS. Among the many proprietary systems are names such as **Perforce** and **Vault**. Some, such as **Aegis** and **Bazaar** and **Mercurial** (the one Mark Stephens uses) are especially designed for "distributed" projects.

Git was designed by Linus Torvalds to manage source code in the Linux kernel project. The name he chose is the British slang word for a stupid, unpleasant person because "I name all my projects after myself: first Linux, now Git."

If you are using a mix of real and emulated RISC OS machines, the RISC OS share works very well if the machines are networked – you just share the drives and they are visible on all machines. It is much less fiddly that Samba or FTP.

I also have a 32-gigabyte USB stick on my keyring, which also works well for file transfer. Do remember to access it from the RISC OS emulator on your Mac or else it will mess up the filetypes. And always appreciate that you could lose the key and anything on it.

Hardware repairs

I bumped my Mac laptop case and managed to tear it. This is very expensive to repair: you have to take it back to Apple – who will fix it by replacing the case. So be very careful with your hardware. Or do the "physical" stuff on a Pi, which costs only £25 to replace.

Upcoming events

After a quiet summer, a lot of events are coming up in the autumn. I will be at the RISC OS London Show on October 25, which is a great opportunity to see the new Pi, buy some new kit, catch up with the RISC OS Open team and compare notes with lots of other developers.

At the other end of the scale I will be attending the annual-since-1996 Java One conference in San Francisco as September turns into October. This is a huge commercial event *[a pass costs around $2,000 —Ed.]* that runs concurrently with Oracle Open World.

Lots of things tend to be happening with Arm devices at the show, and the Raspberry Pi often provides interesting solutions. I will bring you an update if I see anything noteworthy.

Coding is cool again

Things always go full-circle. When I stopped working in education in the late 1990s, the trend was that coding was uncool and a school's job was not much more than to teach how to drive Microsoft products. Now coding is cool again. Lots of organizations are working to get kids back into coding with Scratch *[a free language developed by the Massachusetts Institute of Technology]*, modifying the popular game Minecraft, robotics, and so on.

One huge benefit for us is that RISC OS is being talked about again and used more and more. You see it mentioned on all sorts of sites. People are discovering it and experimenting with it – or fondly rediscovering it after many years.

I am especially impressed with the combination of a Raspberry Pi and a software package called Noobs *[New Out Of the Box Software, presumably for newcomers or newbies; on an 8G card Noobs costs only £5 —Ed.]* With this you can install any one of five operating systems (naturally RISC OS is one of them) onto a SD card to experiment with. I have a Pi and a stack of SD cards on my desk. If you want to get into coding or know someone who might be interested, this is the way to go!

Mark Stephens
markstephens@idrsolutions.com

One of my favourite bits about going to Java One in San Francisco is the free concert at the end: a perfect fun event after a manic five days of doing talks and running an exhibition stand. Since you asked, it was Aerosmith this year. (I believe our Archive editor did offer to bring his banjo to the Ro London show but is still awaiting a reply.)

ednotes

- This looks like the best news in a long time for the RISC OS world. Archive has been briefed about a major announcement to be made at the London show on Saturday, October 25. But I'm not allowed to say anything further before the show. So see you there! There may well be some extra Archive news pages printed for the day.

  In the magazine in your hands, the reports of the Wakefield show and talks will flag up some of the other exhibits you will want to check out at London.

- Did you receive an email from Archive in the past few days? (It was a reminder about the London show, and a call for an Archive member to volunteer to write it up for the magazine.) If not, then please send an email to *updates@archivemag.co.uk* stating your postcode or membership number to amend our database. (Any other message, though, should go to the normal address.)

- The next issue of Archive, back to normal size, all being well will follow not long after the London show. —*jim*

Cover – *And suddenly a new form of life erupts: autumn fungus from a tree stump in Alan Wrigley's former garden in Wiltshire.* *www.alanwrigley.photography*

Archive was founded in 1987 by Paul Beverley in support of the Acorn Archimedes computer and its successors using the RISC OS operating system. It is entirely produced with RISC OS software, notably Impression Publisher and Artworks. Body text is 9½pt Plantin; headings are EFF Eric (Gill Sans). Laserprinted by Direct Offset, Glastonbury. Wordcount this issue: 11,037.

Editor: **Jim Nagel** *jim@archivemag.co.uk*

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➥ **All web links** printed in this issue are also on the website in clickable form: see URLs.

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London Show 2014

This year's London Show is not to be missed. Just a few of the highlights:

- The super-fast ARMiniX and PandaRo
- Lots of hacks on the Raspberry Pi
- RISC OS 5.2 for *all* machines
- Impression-X
- Classic games

... and a major announcement

Saturday 25 October 11am to 5pm

St Giles Hotel, Hounslow Road, Feltham, TW14 9AD

More information and the latest news on the show website:

http://riscoslondonshow.co.uk

ROUGOL

Organised by the RISC OS User Group Of London

http://rougol.jellybaby.net

www.archivemag.co.uk

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